

**METHODS AND APPARATUS FOR LINE SYSTEM DESIGN****Abstract**

Line system design techniques are provided for use in performing routing and coloring operations associated with one or more demands. In one aspect of the invention, a technique for  
5 designing a line system comprises the following steps/operations. A set of one or more demands is obtained for use in computing the line system design. The line system design is then represented as a graph in accordance with a graph coloring operation wherein colors represent bandwidths such that bandwidths are assigned and the one or more demands are routed so as to attempt to achieve a minimum total design cost. The line system being designed may be an  
10 optical line system.